PATENT SPECIFICATION

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COMPLETE SPECIFICATION

DRAWINGS ATTACHED

Multiple Puncture Apparatus

We, ALLEN AND HANBURYS (SURGICAL ENGINEERING) LIMITED, a British Company of Three Colts Lane, Bethnal Green, London, E.2., do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement :—

This invention relates to surgical multiple puncture devices, that is to say devices which can be used to puncture the skin of a patient in a number of places in a single operation. These devices are used for the administration of chemical or biological material for therapeutic or diagnostic purposes.

According to the present invention, such a device comprises a barrel containing a displaceable plunger, means for displacing the plunger, a needle plate retained by the magnetic member of the plunger by magnetic attraction but removable therefrom as desired, and a perforated skin plate attached to the needle plate, the needle plate being movable with respect to the skin plate so that needle points on the needle plate can project through holes in the skin plate when the plunger is depressed.

In the accompanying drawing:

Figure 1 is a sectional elevation, on the line 1-1 of Figure 2, of a surgical multiple puncture device according to this invention, and

Figure 2 is a plan view of a needle assembly.

In the illustrated embodiment of the invention, a surgican multiple puncture device comprises a cylindrical barrel 1 which flares outwards at one end hereinafter considered to be the lower end for convenience of description. A locating ring 2 is arranged inside the flared end of the barrel and is integral with the barrel. The wall of the flared part of the barrel projects beyond the lower surface of the locating ring.

A plunger 3 is movable inside the barrel 1. This plunger has a magnetic plate 4 at its lower end, the plate 4 being held in position by a retaining screw 5 which screws into the main body of the plunger 3. The plunger is loaded by a spring 6 to an inoperative position in which the lower surface of the magnetic plate 4 is flush with the lower surface of the locating ring 2 which surrounds the periphery of the magnetic plate.

A plug 7 is screwed into the other end of the barrel 1. This plug 7 supports a finger grip 6*a* and carries a handle 8 which terminates in head 18*a* and which includes a spring-loaded operating mechanism for displacing the plunger inside the barrel. This mechanism includes a striker rod 9 and a compression spring 10, which is not described since such mechanisms are well-known and form no part of the present invention. Such a mechanism is, for example, described in the Specification of our prior British Patent No. 885,036.

Removably secured to the lower end of the plunger by the magnetic attraction of the magnetic plate 4, is a needle assembly. This assembly comprises a needle plate 11 having a number of needle points 12, conveniently twenty, punched out of the plate and a perforated skin plate 13 having a number of holes 14 equal to the number of needle points 12. The needle plate 11 is perforated. The holes 14 in the skin plate 13 are arranged so that the needle points 12 can protrude through them. The skin plate 13 has a plurality of legs 15, conveniently four, extending upwards from

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it, these legs being turned over inwards at their upper ends 16. The needle plate 11 is therefore retained between the legs 15, but is free to move with respect to the skin plate 13 between limits determined by the upper surface of the skin plate and the turned over upper ends 16 of the legs. The height of the legs is slightly greater than that of the needle points.

The needle plate 11 has an outwardly directed projection 17 which fits in a cut-away portion (not shown) in the wall of the flared portion of the barrel.

In use, the needle assembly is placed on the magnetic plate 4 at the lower end of the barrel. The legs 15 of the skin plate 13 then fit on the locating ring and the needle plate 11 is magnetically secured by the magnetic plate 4 of the plunger. The skin plate 13 is then placed on the skin of a patient and the operating mechanism is operated to displace the plunger 3 downwards so that the needle plate 11 is moved to position the needle points 12 beyond the skin plate with the result that the skin of the patient is punctured. The device is then removed from the patient when the parts return to their original positions under the action of the spring 6. This cycle of operations is repeated as often as is required. The needle assembly can then, if desired, be removed from the device and replaced by another one.

WHAT WE CLAIM IS:—

1. A surgical multiple puncture device comprising a barrel containing a displaceable plunger, means for displacing the plunger, a magnetic member on the plunger, a needle plate retained by the magnetic member of the plunger by magnetic attraction but removable therefrom as desired, and a perforated skin plate attached to the needle plate, the needle plate being movable with respect to the skin plate so that needle points on the needle plate can project through holes in the skin plate when the plunger is depressed.

2. A device as claimed in claim 1 wherein the skin plate has a plurality of legs extending towards the magnetic member, the end of the legs adjacent the magnetic member being turned over so that the needle plate is held between the skin plate and the legs.

3. A surgical multiple puncture device substantially as described with reference to the accompanying drawing.

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FIG. 1.

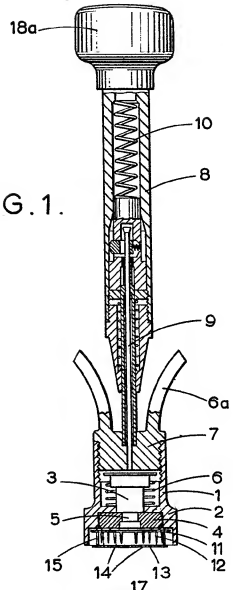

FIG. 2.